June 8, 1926.

1,587,581

C. C. FRAUTZ

CLEAN OUT CAP AND MEANS FOR LOCKING SAME

Filed May 25, 1925 2 Sheets-Sheet 1

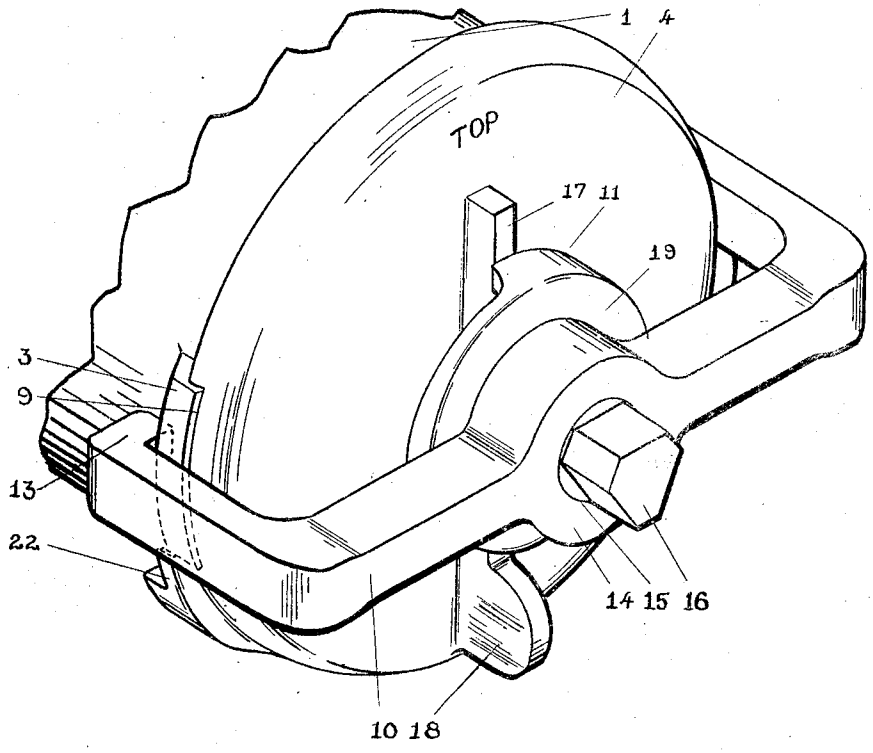


FIG. 1

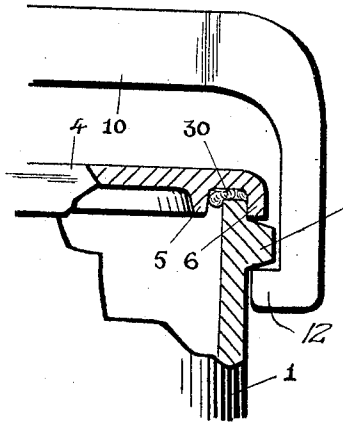


FIG. 4

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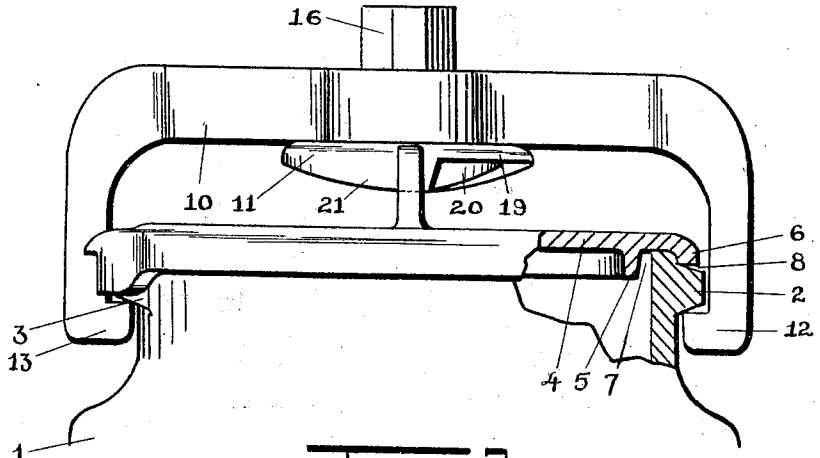


Fig. 2

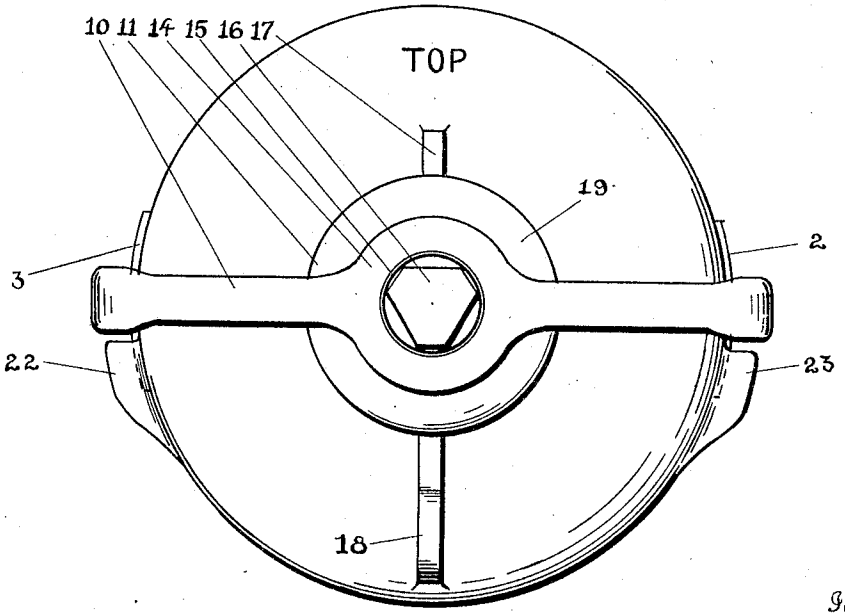


Fig. 3

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UNITED STATES PATENT OFFICE.

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CLEAN-OUT CAP AND MEANS FOR LOCKING SAME.

Application filed May 25, 1925. Serial No. 32,608.

The object of this invention is to provide the clean out opening of the radiator of a furnace with a new and improved type of cap and means for locking the same in place over the clean out opening.

This and other objects of the invention will be fully illustrated in the drawings, described in the specification and pointed out in the claims at the end thereof.

In the accompanying drawings:

Fig. 1 is a perspective view of the end of the radiator in which the clean out opening is provided showing the cap in place thereon.

Fig. 2 is a bottom plan view of the end of the radiator with the cap mounted thereon, part of the cap and the radiator being shown in section.

Fig. 3 is a front elevation of the clean out cap as it appears attached to the end of the radiator.

Fig. 4 is a detail sectional view of a portion of the clean out end of a radiator and cap for it showing a slightly modified construction.

In the several figures of the drawings like reference numerals indicate like parts.

The clean out cap and means for locking it in place which forms the subject matter of my present invention is especially adapted for large types of furnaces such as are used for burning all kinds of fuel including soft and hard coal, coke or wood. Such furnaces have a radiator in which several clean out openings are provided so that it can be readily cleaned out and kept clean.

As illustrated in the figures of the drawing the outer end of the radiator 1 in which the clean out opening is provided is of reduced diameter and is provided with a pair of lugs 2 and 3 located diametrically opposite each other, near the outer end of the radiator. The cap 4 which is placed over the clean out opening comprises a circular disk provided with two concentric flanges 5 and 6 on one side thereof. The two flanges form an annular channel 7 between them into which the outer edge of the radiator is adapted to engage as illustrated in section at the right hand side of Figure 2 The outer flange 6 is cut away at 8 and 9 to receive the lugs 2 and 3 of the end of the radiator and allow the cap to fit closely over the clean out opening.

The cap is placed over the clean out opening of the radiator as above described and is held and locked in place thereon by means of the yoke 10 and the cam 11 carried by this yoke. The yoke 10 is U shaped and its outer ends are provided with the inwardly projecting lugs 12 and 13. These lugs are adapted to engage under the lugs 2 and 3 of the radiator to hold it in place when the cap is forced against the clean out opening of the radiator by the cam 11.

The middle of the yoke is enlarged as illustrated at 14 and is provided with a cylindrical opening 15. In this opening is mounted to rotate the stem 16 provided on the outer end of the cam 11. The portion of the stem 16 that is located within the opening 15 of the yoke is cylindrical, but the extension thereof which projects from the opening is provided with flat sides so that a wrench or shaker handle can be made to engage therewith to rotate the stem with it.

On the outside of the cap is provided a ridge 17 which extends from the one side of the cap diametrically across to within a short distance of the other side thereof. One end of this ridge is raised to provide a handle 18 by means of which the cap can be rotated on the radiator before it is clamped in place thereon and placed into its proper position over the clean out opening. The cap is in its proper position when the ridge 17 is in a perpendicular position with the handle 18 thereof at the lower end of the ridge.

After the cap is placed into this position it is forced against the radiator by means of the cam 11. This cam comprises a disk 19 having a pair of inclined cam surfaces 20 and 21 formed on the inner end thereof diametrically opposite each other as illustrated in Figure 2. The disk with these cam surfaces is held centrally of the cap by the yoke 10 and the cam surfaces are adapted to engage the top of the ridge 17. On the rotation of the disk 19 the cam surfaces slide over the top of the ridge and gradually force the cap away from the yoke and against the clean out opening until the cap is firmly clamped in place on the outer end of the radiator and hermetically seals the clean out opening provided therein.

As illustrated in Fig. 3 the cap is pro-

vided with a pair of ears 22 and 23 that project from the periphery thereof. These ears are located below the center line of the cap to allow the yoke 10 to span the cap but prevent the rotation of the cap after the yoke has been put in place with the ridge 17 held in its perpendicular position. This is a further check for the proper position of the clean out cap on the clean out opening and makes it impossible to place and lock the cap on the end of the radiator in any but the position illustrated in the figures of the drawing.

As illustrated in Figure 4 the clean out end of the radiator may not be reduced in diameter in which case the cap is made larger so as to allow the end of the radiator to engage into the annular channel provided at the back of the cap. The annular channel may also have a packing 30 inserted therein so that when the cap is forced over the clean out opening it will form a perfect seal between the cap and the opening. Figure 4 also illustrates that when the lugs 2 and 3 are located a short distance from the outer edge of the clean out end of the radiator, the outer flange 6 of the cap need not be cut away in order to allow the cap to engage over the clean out opening.

I claim:

1. In a clean out cap and locking means therefor, the combination of a yoke, means for anchoring said yoke to the end of a radiator, a rotating cam carried by said yoke, said rotating cam comprising a disc, a pair of concentrically inclined cam surfaces on one side of said disc in series with each other, a pivot stem on said disc on the opposite side to said cam surfaces, said stem being mounted to rotate centrally of said yoke, a ridge formed on said disc, each of said inclined cam surfaces being adapted to engage with said ridge and force said disc away from said yoke and against the end of the radiator to which said yoke is anchored.

2. In a clean out cap and locking means therefor, the combination of a yoke, an inwardly projecting lug at each end of said yoke, a radiator, a pair of lugs provided at the end of the radiator, at diametrically opposite points thereof, said lugs on said yoke being adapted to engage the lugs on said radiator, a cam carried by said yoke, said cam comprising a disc, inclined cam surfaces on one side of said disc, a pivot stem projecting from the other side of said disc, a bearing provided in said yoke, said pivot stem mounted to rotate in said bearing, and means carried on said pivot stem to rotate it in said bearing, a cap interposed between said yoke and said radiator, said cam being adapted to force said cap against said radiator on the rotation thereof.

3. In a clean out cap and locking means therefor, the combination of a radiator, having an opening in the end thereof, a cap for closing said opening, a pair of concentric flanges forming an annular channel between them provided on one side of said cap, said annular flanges being adapted to engage over the outside and inside of the end of said radiator, a pair of lugs provided on the outside of said radiator one on each side of the opening thereof, a yoke bridging said cap from one side of said radiator to the other side thereof, an inwardly projecting lug provided at each end of said yoke and adapted to engage with the lugs on said radiator, a bearing provided centrally of said yoke, a pivot stem mounted to rotate in said bearing, a cam disc carried by said pivot stem on one side thereof, concentric cam surfaces provided on the inner face of said cam disc, a ridge projecting from said cap, a handle formed on said ridge for the purpose of rotating said cap, said cam surfaces being adapted to engage said ridge and force said cap against said radiator on the rotation of said cam.

In testimony whereof I affix my signature.

CHARLES C. FRAUTZ.